

San Francisco Bay Architects'

REVIEW



Making Architecture
Ten Architects Talk About the Process

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FRANK LLOYD WRIGHT

A Selection of books from the AIA/SF Bookstore

Apprentice to Genius: Years With Frank Lloyd Wright Tafel, McGraw-Hill, \$21.95. The first book on Frank Lloyd Wright by an architect and former student. Gives insights into Wright's working habits, methods, philosophy of architecture, personal quirks, personal life and his pure devotion to the "Cause of Architecture".

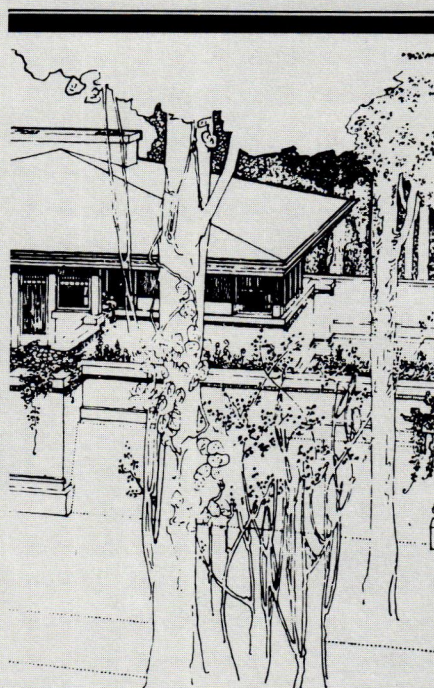
Architecture of Frank Lloyd Wright: Complete Catalogue Storrer, MIT Press, \$15.00. "Progressive Architecture" summarized the book's program and plan as follows: "This work is the only publication that documents all of the buildings designed by Wright. It also offers a short commentary on each building and a picture of each extant structure."

Building With Frank Lloyd Wright: An Illustrated Memoir Jacobs/Jacobs, Chronicle, \$8.95. The authors have detailed the building of two Wright houses which were landmarks in the field of housing design—houses which pioneered such innovations as the use of solar heat. They describe a long-lasting working relationship and friendship with Wright.

In The Cause Of Architecture: Frank Lloyd Wright For The Record Gutheim, McGraw-Hill, \$20.50. Those who worked with Wright and knew him well, and who have become leaders in architectural thought today, examine the

Wright heritage now, fifteen years after his death. Includes the sixteen historic essays written by Wright for *Architectural Record*.

In The Nature Of Materials: The Buildings Of Frank Lloyd Wright Hitchcock, Da Capo Press, \$8.95. Hitchcock covers the major phases in Wright's first



Perspective of Edwin H. Cheney House, Oak Park, Illinois, 1904. From: In The Nature of Materials, by Henry-Russell Hitchcock.

50 years: the apprenticeship with J.L. Silsbee, the movement toward maturity with Sullivan, the links with Richardson, the prairie architecture, the textile block house and cantilevered skyscraper projects of the early '20s, the creativity of the late '20s and early '30s, and the projects of the Depression years.

Frank Lloyd Wright: A Study In Archi-

tectural Content Smith, Am. Life Foundation, \$100. The author discusses Wright's concern to establish three basic architectural images—symbols of the ideal life at home, at work, and in the community.

Frank Lloyd Wright's Falling Water: The House And Its History Hoffmann, Dover, \$5.50. The birth, growth and maturity of Wright's famous waterfall house. 100 illustrations show development of Wright's "organic form" at Bear Run, western Pennsylvania.

Frank Lloyd Wright: His Life And His Architecture Twombly, Wiley, \$19.95. A rich, detailed text that examines Wright's public and private life, as well as his role in twentieth century society, culture and politics. An objective, close-up view of Wright and his work, with photographs, floor plans and drawings.

Frank Lloyd Wright's Usonian Houses: The Case For Organic Architecture Sergeant, Whitney, \$24.50. The author defines organic architecture and shows how the first Usonian—the Jacobs house—incorporates Wright's innovative, ecologically sound, and low-cost building techniques. Taliesin is described, and the author shows how Wright tried to popularize his social program through organic architecture.

The Prairie School: Frank Lloyd Wright And His Midwest Contemporaries Brooks, Norton, \$7.95. The author discusses the entire phenomenon of the Prairie School. Included among some twenty architects studied are Griffen, Purcell and Elmslie, Byrne, Drummond, Garden, Perkins and Maher. Includes drawing on much unpublished material and original documentation, as well as interviews with many of the architects.

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I N S I D E

Some Thoughts About Napkins

By JENNIFER CLEMENTS

SEEING A FINISHED BUILDING is rather like reading only the final pages of a novel. You skip the first 12 chapters. Unlike a book, however, the design process is rarely intended for the public eye, in fact it is often not even recorded at all. Early sketches and working models are generally tossed into the wastebasket.

Chapters 1 & 2 of the process, where the client unfolds his hopes and dreams, are irretrievably lost and forgotten. Chapter 3, however, where the architect scribbles his first ideas for the scheme on a napkin, just might have survived. This issue of the *Review* will concern itself with the napkins of architectural design, the devices an architect uses to translate his ideas into forms.

Do buildings that are designed with models look different from buildings that are designed with sketches? Do most architects design in three dimensions or two? The Beaux Arts School used plans and elevations as design tools whereas James Stirling professes to use axons and Charles Moore, models.

I have chosen ten architects, one critic and one historian to explore the topic. The architects interviewed represent both big and small local firms; those who are experienced as well as those who are relatively new at it; house designers in addition to the creators of big buildings. Jan Alff and I split the interviews and we found that the ten architects were remarkably generous with their time, photographs, drawings and information.

The production of design is an internalized process that most architects don't seem to think about. They just do it. Some architects design with words, relying on the pencils of their talented employees while others sketch the design diagrams themselves while waiting for the bus.

We found very different levels of regard for early design drawings and models. Some offices display these intermediate representations of their work with pride while others take care to destroy the early tools. Some are embarrassed about the style of their work while others see those evidences of process as valuable and beautiful. Some keep voluminous files; others keep only the legal documents. Models are obviously victims of time. They don't fit in file drawers and it's awfully hard to dust the trees.

Not surprisingly, younger offices tend to have more time to develop and treasure early drawings. Quality of work, however, seems to have nothing to do with the size of an office. A big, busy office is less likely to keep napkins but equally likely to use them.

Models don't necessarily produce cardboard-looking buildings that lack scale. Buildings designed with eye-level sketches aren't always more romantic and lacking in dynamic geometry. We offer an interesting array of opinions on this controversy rather than statistical results. More important, I think we offer a view of how ten architects go about designing. We learn that Louis Kahn threw out his yellow sketches while Hans Hollein kept every scrap. We learn that Bill Turnbull's office works out details with the contractor and that Warren Callister is left-handed. HOK does freehand working drawings, the Art Institute was Paffard Clay's living model and Henrik Bull's father was an illustrator. We read about some architects who are pro-models and other who prefer sketches. And we learn that napkins are indeed a preferred medium for capturing early ideas.

Cover: Napkin sketches of San Francisco State Student Union by Paffard Keatinge Clay.
Photo: Dinibanian/Aero Photographers.

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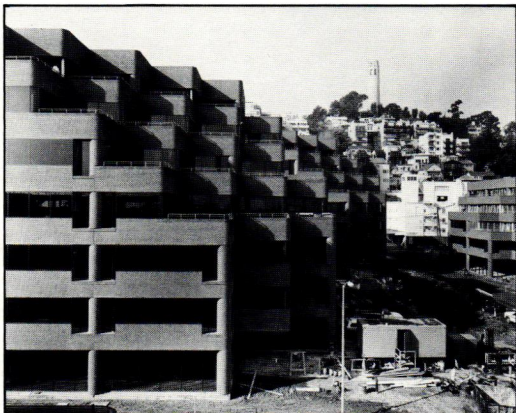


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INTE

The *REVIEW* Interviews The Process Of M

Photo: Peter Henricks



"We almost always use foam models because it's so quick"

"In preliminary drawings, use a crude tool"

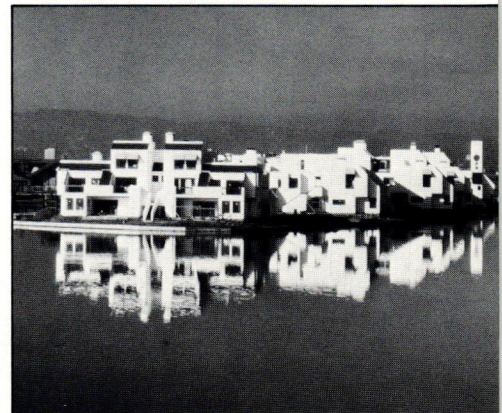


Photo: Wolfgang Herzog

Photo: Jennifer Clements

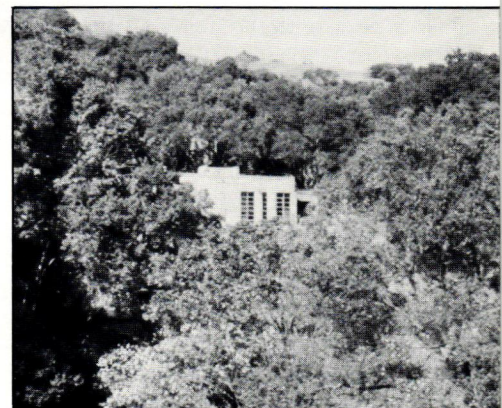


"This building is assembled from a 'catalog' . . . of San Francisco street features."



"Like the Scenographer . . . we paint the environment."

"I start out with plan . . . and do a lot of little sketches."



Ten Bay Area Architects on Making Architecture

Photo: Gerald Ratto



"You can hardly see the drawings for the models"

"I go through sheet after sheet . . . working toward some conceptual idea. . ."



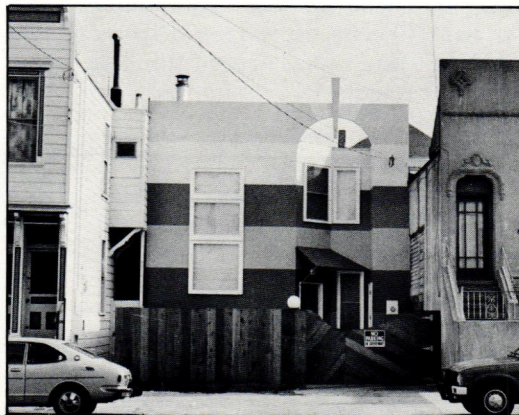
Photo: Cervin Robinson

Photo: Phillip Molten



"Process . . . the most beautiful aspect of a building . . ."

Photo: Jennifer Clements



"From the Plan, an elevation was literally just tilted up."

"The pen is an extension of my hand . . . wherever I am."



Valentine: Levi is a family kind of company. The second they moved into the Embarcadero, they realized there was a mistake because it was a corporate setting, so Gerson Bakar and partners had this brilliant idea and persuaded Levi onto their site with the idea that it would reflect their very soft quality; we would say the quality of a pair of good, worn jeans.

Review: *Did the early design process also involve three-dimensional drawings?*

Valentine: We used models made of foam. We would take a certain amount of foam that we knew represented the right amount of floor area in 1/50 scale and we could do different schemes just by piling up the blocks. We'd lay the site plan flat and stack them and say, "Now that's seven floors. That's the maximum zoning height. We could step this down. We could cut out this balcony. Oh, damn, we've got fifteen squares of foam left over. We don't have enough space left in that scheme." And then we'd start over.

Review: *Were you thinking about an image at the same time?*

Valentine: Well, we always had this idea that it should have a very soft fit, a "within the scale of the city" look rather than the "here I am, come look at me" look.

Review: *Did you use foam because you knew you wanted a soft image?*

Valentine: No, we almost always use foam models because it's so quick. We can go through ten variations in a morning and record them with a Polaroid or the Xerox.

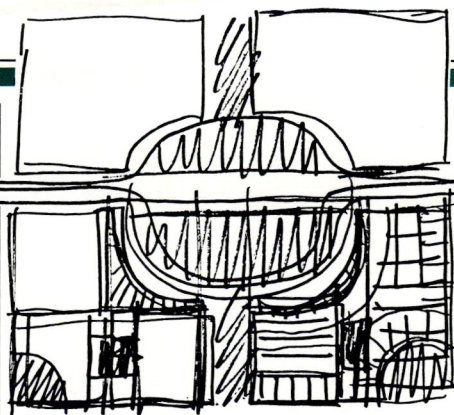
Review: *Do you think the appearance of the finished building was affected by the fact that you used foam? Do you think that if you had developed it using perspective sketches or elevations that it would have looked different?*

Valentine: That's a very interesting question. We could get this sort of step quality that we wanted, related to the hill. I think if we had tried to draw it and just record it in models at the end, we'd have had a different building.

Review: *If you were doing an infill building with only a front, would you still use foam?*

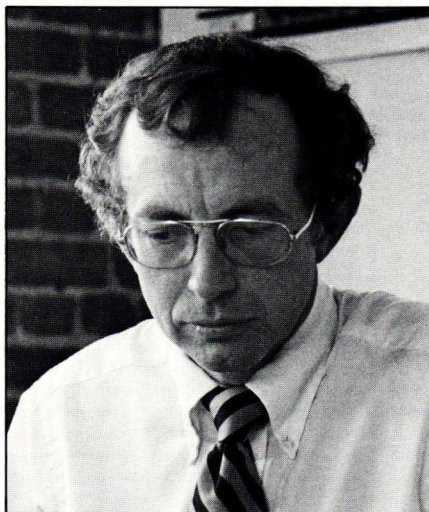
Valentine: I see what you mean. Saks

Levi Strauss and Company Complex. Top: preliminary sketch. Right: photocopy of a foam model.



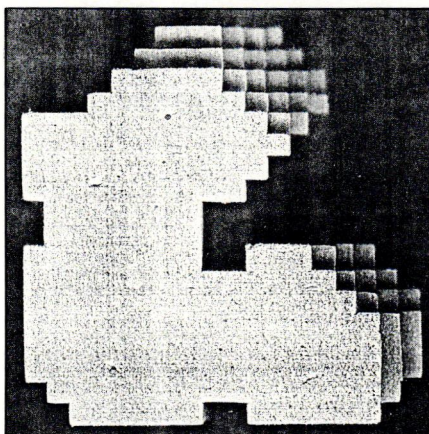
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Photo: Peter Henricks



Bill Valentine

About the Levi Strauss Buildings



was a different kind of model. It was cardboard, more precise. We always use models, though. Nobody in this office can draw. I can't draw at all. Rather than be esoteric about it and think about it a lot, we just cut it out of foam and look at it. It's like a poor man's computer system.

Review: *How do you deal with interiors? That's hard with a model.*

Valentine: On the Convention Center, we used models. They would be cardboard. The 3/4" interior model was from here to the desk and that was only half the lobby. We put color and form and graphics into that model so it had the look of 80% real life. At 3/4", you can look right into them. The trick is to find the simplest possible way to make it even if it's very rough so you can hack it up.

Review: *When you were a student, were these the techniques you used?*

Valentine: I always used models. In graduate school, I used models because I couldn't draw particularly well. I was working on a physical education complex at Harvard and everybody else was doing all these drawings. I would go home and build a model a night. It wasn't foam because I didn't have the technique yet but I ended up with this array of models. Sert and the guys would come around the desk and pick them up and turn them around.

Review: *How many models do you think there were for Levi?*

Valentine: We counted one time and I think there were fifty or sixty. And of course we photographed some versions and changed them. We worked out the curtain wall models at 1/16". Then we worked up to a detailed model at 3/4". We always work out the details in the models. Our working drawings are actually mostly freehand sketches. The plans are generally hard-line but all the details are freehand. A detail is done on a tracing paper pad, given a number and filed away. At the last second, it's all taped down and then it's offset for the working drawing set. All the offices use this technique.

Gerson said we had to build one bay full scale so we made sure it was right. We persuaded him that instead, we should build a very serious model at 3/4" of many more repetitions than just one bay. We turned the corner the day the model was finished. Everybody said that's exactly what we wanted.

Review: *Could you describe what kinds of drawings, what kind of process you used to first translate the ideas that you had about this particular project into forms?*

Solomon: This particular project may have been a little bit atypical because it is so much a row house facade. These little drawings, which are frontal pictorial street elevations, had a larger role in the design than drawings like these usually do. Normally at this stage of design, I'm



Glover Street Condominiums: Early sketches

working with very rough models and scissors and tape, not with doodles.

Review: *Did you begin with a plan or section before the sketches?*

Solomon: Of course. Because this is a 25' infill row house, the plan type was pretty familiar. The manipulations occurred with sections and elevations. There's always some planning and then there's the plan and section and then a rough model very early. I might also use some kind of very crude transparent isometric or something like that.

Review: *Some people seem to be able to draw in elevation and plan and think in three dimensions and other people seem to design in three dimensions. You're someone who prefers to work in three dimensions with models. Is that true?*

Solomon: Part of my use of models is my own inability as a draftsman. I consider myself very deficient in drafting skills.

Review: *Models seem inflexible.*

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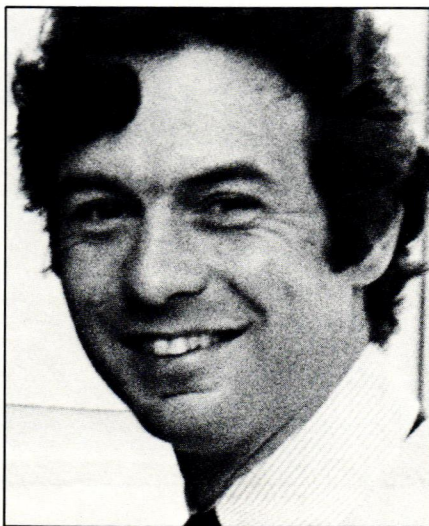
Dan Solomon

About the Glover Street Building

Solomon: Oh, no. There are really fast ways to go with models, really very crude fast ways. I start someone with a model and after they get a certain way into it, then I rip it apart. First there's a beginning of a careful representation and then it gets very crude and fast, hacked apart and changed. The model is a great source of conceiving relationships in a much more flexible way than I find through drawing. A drawing is always for me a sort of grim struggle to represent and is therefore not a facile tool for manipulation.

There's a very strong sense of streetscape on the outside. A San Francisco street has typical features, the entrance, the garage doors, gabled bay and so on. This building is assembled out of those features. An architect has in his head a kind of catalog of those things which he uses to assemble a building. This one has a split pediment, oculus, bay, stair, symmetry, a whole little parcel of typological baggage that comes out of San Francisco row houses.

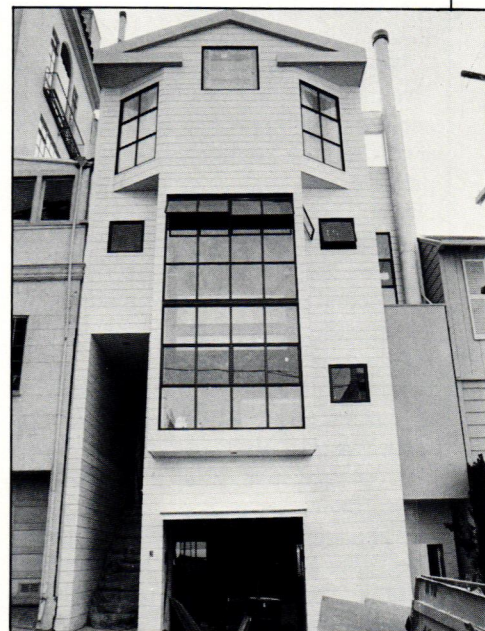
Review: *How about color? Do you deal with color at this early stage? There's color in this section but it's used as coding. At what point does color enter?*



Solomon: Pretty late. I always assumed this would be a light building and it would be pretty simple and I guess sometime after the elevation was resolved, the idea of making the pediment a not very strident accent emerged.

Review: *When you were a student, did you design similarly to the way you design now or has that process evolved?*

Solomon: That's interesting. In a curious way, this building is more like I de-



Glover Street Condominiums.

signed as a student than most everything else. When I was a student, there was this sort of pictorial image that led the process like this. This is like reverting to some process that was natural when I first began twenty years ago being pictorial at the beginning and then letting that guide me.

Review: *Do you think that the method you or others use has an effect on the final building? Is it possible to generalize and say that people who use models are probably going to end up with a building that looks one way or another?*

Solomon: Well, I just sat through a beautiful lecture that Jorge Silvetti does on that subject where he talks about the relationship between modes of representation and the quality of the modern movement and its deficiencies and the ways in which the newer modes of drawing are addressed to the major sort of stylistic issues. Of course, it's all intertwined.

Review: *What did you first do to start working on The Islands?*

Friedman: When we had our first discussions with the city planning group and our client, we discovered they were interested in a community with a distinctive identity. T. Jack Foster, the original developer of The Islands set aside those islands as a focal point for the town. It was a sensitive issue because we were asked to provide a landmark within the community as well as satisfy the developer's normal criteria: make it a marketable housing project.

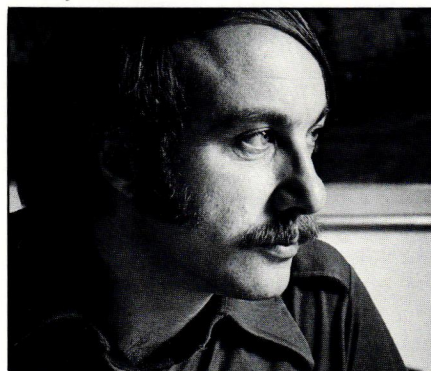
We won a design competition down at Twentieth Century Fox several years ago and we were impressed with the sound stages because we realized that they could produce any kind of environment they chose. There's a certain amount of scenography, or scene painting, involved in what we do just as the studios do. It's an intellectual process for the architect, but a necessary process for the film maker. Like the scenographer, or the movie director or the writer or the architect, we can paint and construct that environment. We say "Ah ha, it should be a maritime environment. And it should be in these colors."

Then we go through the analysis process: what is the maritime environment? Tahitian? No, it would be inappropriate, absurd. New England? No, we don't want to do that. A maritime that relates to the Normandy Coast? No. Brittany? No. You're going through all those things that have preceded you in terms of time and place.

We incorporated color into some of the sketches. That's how the white, blue and

INTERVIEW

Photo: Josbue Freiwald



Rodney Friedman

About The Islands

yellow were developed. As a matter of fact, it was never anything else. We knew that white would really work because it would enhance the reflective qualities of the buildings. They would be mirrored in the foreground lagoon. We knew planting would work well against white and that white would be correct against the blue of the tile and the sky.

Review: *Once you had arrived at those basic concepts, how did you proceed through the rest of the design process?*

The Islands: Early drawing

Friedman: Once we had those first decisions, the rest was easy. Once we make the decision about what a community should be like, we feel that we're skilled enough, talented enough, to do an excellent job. So we take the design process almost for granted. We rarely sit down and talk about, for example, how the sun is different, or the light. We say, "This is what we're going to do."

Review: *Then do you begin to put those intellectual concepts on paper?*

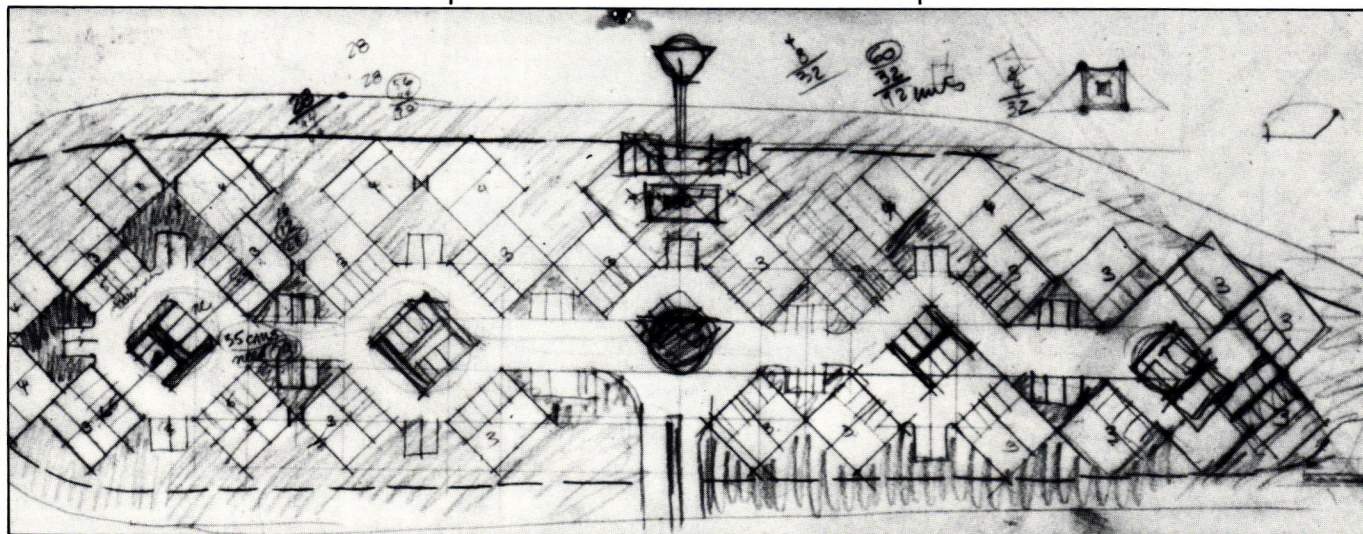
Friedman: For the past ten years, most of the projects start on a very rough basis. We start with a rough sketch and then we pass this information to our client in meeting and work sessions while we go through the next steps. These are not elaborate drawings but they are to scale. For our own use, we build cardboard and foam models so that we can analyze the geometry and the scale.

Review: *How do you think those models actually influenced the design?*

Friedman: Dramatically. In the final designs, we learn whether we've made the correct decisions. The models are the reason we make changes.

Review: *How do you train new staff members about your intellectual process?*

Friedman: We try, on a periodic basis, to have a full staff meeting and acquaint new people with all the work that we've done. We discuss with them the philosophy of the firm, why we do things and how we arrive at decisions. We try to spend enough time in the interview process, before hiring, to explain the goals of the firm. Not all firms have goals. We do.



Review: *How did you arrive at the round form for the chapel?*

CWC: Dr. George Hedley, to whom the chapel is dedicated, was the much-revered Chaplain of Mills College in Oakland, and a very early advocate of the circular nave form for worship. His participation in the evolution of the design was paramount. The circular place of worship is within a wooded garden site entered through a separate but arcade-connected narthex, a sequence that is much in the manner of the relationship of temple and shrine to their gates in the Orient. The chapel is nondenominational for a women's college that draws students from all religious traditions. The use of the somewhat Oriental arrangement in entering the chapel seemed appropriate to the students, as well as the the San Francisco Bay region, with its strong Oriental cultural and architectural influences.

Review: *Didn't the circular form bring about acoustical problems?*

CWC: Yes, it did, and we were determined to have the best acoustical quality possible, both for services and for music, for the chapel was also to serve as the home for a very fine Holtkamp organ to be used by the music department.

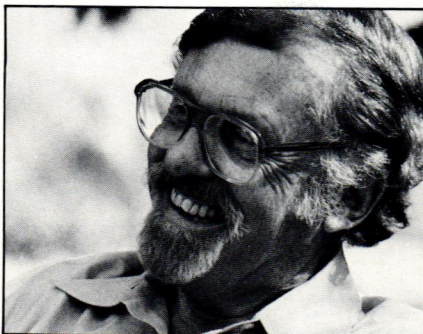
Review: *Did models play a significant role in helping you to solve some of these problems?*

CWC: The actual and final panelization of the shell and volumetric shape of the circular nave was determined by submerging models in a liquid which simulated the acoustical behavior by observing flourescing waves induced by electric impulses.

Review: *How do you design? What form do your sketches take?*

CWC: They would be left-handed, left-leaning sketches if I should do sketches at all in my notebook. I often put down in my notebook or on a paper napkin the most general possibilities that a project might generate. These most vague design sketches emerge out of listening to the client and to thoughts and ideas coming from my colleagues. I feel very strongly that architectural creation is a consensus of those involved.

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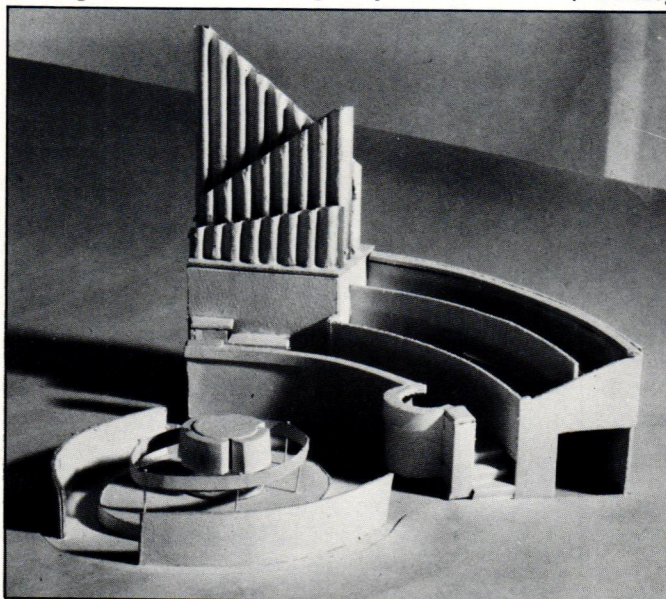


Warren Callister

About Mills College Chapel

I view the architect's role as similar to that of a director of a film in which the director is neither the writer, the actor, nor the cameraman. Not only does any creative architectural project have the persuasions of the moment in history, but also it must reflect all the conditioning factors of locale, site, materials, technics, costs, and most importantly the influence of everyone involved. Design happens when these involvements are allowed to occur.

Mills College Chapel model.



Review: *How do you feel about your drawings? Are they "works of art"?*

CWC: I'm told that today architects' sketches are sometimes being considered as works of art. With this I essentially disagree. They are often part of the process and may be successful instruments of explanation or illustrations of the collective architectural process, and they are interesting in the revelation of the design process or the means of achieving a building. Illustrative drawing, models, working drawings may in themselves be displays of great craftsmanship and technique, but should not be taken for architecture. The building is the architecture and may or may not be a work of art.

Review: *What sort of notes do you make as you design?*

CWC: I personally take notes on everything that clients might say, for as I have indicated, thorough notes actually prescribe most of the conditions of a project and can be the essential device in the evolution of the design. The notes and "scrap" that best project the mood and aesthetic qualities rather than just factual and programmatic information are the best to have. The verbal discourse in our design development process among the group that is participating is also of great importance, and is again as important a tool as sketching.

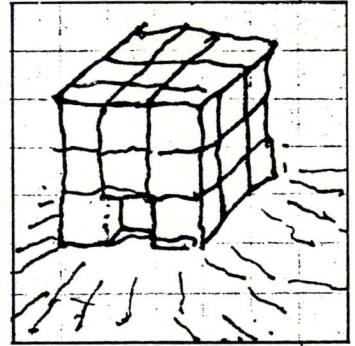
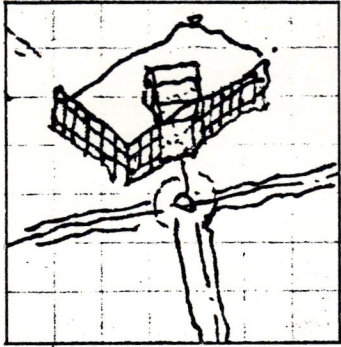
Review: *Must this process take place before everything else?*

CWC: In my opinion, yes. It is important to listen to all ideas about a project. It is a dialogue that goes on between all of us

who are involved. It is not the first sketch that starts a project; it is the multitudinous original information that commences the design process. No one person can claim origination in architecture, for as far as I can observe, it is not true nor possible in such a social and collective art form as architecture.

One of the things I learned in visiting Japan was the tremendous importance placed on the total "process" as being the most profound and aesthetic aspect of their architecture; more important than even the completed building. This sort of beautiful process is the nature of our design.

Photo: Charles Callister, Jr.



Review: *How do you get started on a new design?*

Goldstein: My way of working is to take the problems at hand, without any preconceptions. Certainly, not what I did the week before, or even ten years ago. And then I really jump into *that* problem, *that* site, *that* client, *that* project, *that* climate . . . well, I won't bore you with the litany!

I start with a clean chalkboard every time. Of course, the reality is that it's not this way. I do have preconceptions. I do remember what I did the week before or last year. I can't forget entirely, but I try. I try.

Review: *What kinds of tools help you to develop the early design?*

Goldstein: I expect that we make greater use of models than most architectural offices. If you come into our drafting room, you see that it's totally littered with them. You can hardly see the drawings for the models.

Review: *Do you place more importance during design development on models rather than sketches?*

Goldstein: Absolutely. There's no question. If you have a good draftsman, you can make damn near anything look attractive. You can make a very attractive idea that's poorly drawn look unattractive. A model is much more objective.

Review: *Skidmore, Owings & Merrill is recognized as being very much in the forefront in employing the computer as a tool in design. What kind of role do you see the computer playing within the profession?*

Goldstein: The people who make the least use of computers are the design-oriented types. It's going to be a somewhat drawn out effort to get people used to these things and to have them in the room.

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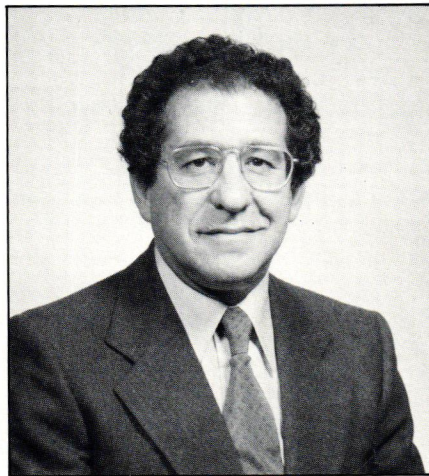


Photo: Sansome Photos

Marc E. Goldstein

About the Corporate Headquarters Building for Advanced Micro Devices

There are people who think that computers are the salvation of their architectural souls. That's nonsense. I think there will always be people who are against it to a degree that's unwarranted and those who will be with it to a degree that's unwarranted. There's no doubt in my mind that it's going to become a very basic tool of the profession.

Corporate Headquarters Building for Advanced Micro Devices in Sunnyvale: Final model and early sketches. Photo by Gerald Ratto.

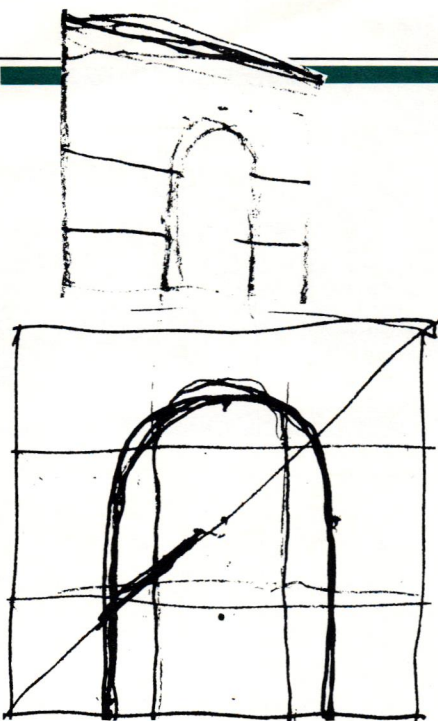
Review: *When you are contemplating a fresh problem, how much of your eventual solution is based upon intuition and how much on rationality? Which comes first?*

Goldstein: That's a marvelous question! I'll answer the second one first: Which comes first? The answer to which one comes first is neither and both.

What comes first doesn't mean anything to me because at the start, all kinds of things are happening. The intuition and feelings and thinking, as you're getting into it, are tumbling all over each other.

I think that you're quite right that there are different methods. Some people want to go through that miasma. You have the nature of the project somehow, but you do get to the point where you have feelings about the project and the knowledge of the project, the knowledge of what you have to do . . . You can be feeling while you are thinking. You can be thinking, "Let's see now, this thing is going to be 500,000 square feet," and simultaneously you can be feeling, "Oh my god, it's another one of those!", or "What an awful site!"

On the other hand, the whole thing could reverse and you can say, "Gee, what an absolutely wonderful thing to be doing!" Instead of marching into the fray, you dance into it. And, in that case, your emotions would be very much in the forefront in the beginning of how you're approaching it. If you're sort of marching rather than dancing, you're really thinking, "Well, what's the best system structurally? To what degree are we going to play with geometry?" That becomes a much more *thinking* concept.



Florida Street House: Early drawings

Review: If you had to identify a primary design tool like a plan, elevation, axonometric or eye-level sketch, which would it be for this building?

Kotas: For this building, the main basis was the plan. From the plan, an elevation was literally just tilted up. In an ordinary building, you have side walls, but in this case, you have only a plan and one side of the house to design.

Review: At this stage, do you consider the house as a three-dimensional object?

Kotas: Not strictly speaking at first, not at this stage. Because the limits are so severe. You can't expand sideways. You can't have outlooks in all directions. You are very limited. Once you get the relationship established between the plan and the elevation, then you begin to lock the spaces into three-dimensional rooms or perhaps something more complicated. In addition to the plan and the elevation, I used endless little sketches. We also did a model of the facade.

The theory that I'm working behind all these buildings is called Syncretism. It's not so far in many ways from the word Eclecticism. Syncretism refers to a fusion of opposites. Not as randomly as Eclecticism suggests, but more powerfully. The only piece of it we got is in the parapet where it's cut out and you actually see the sky. This is a 20th Century box. This building is completely up to date and modern, but it has a lot of affinity for the buildings next to it that are a hundred years old.

INTERVIEW

Jeremy Kotas

About His Florida Street House

Review: If you had a different site or a different program, do you think your approach would be different?

Kotas: Yeah, Here's a little model of a house in Florida which I made for my own benefit during the design.

Review: Why was that design done with a model and this house done with a plan and facade?

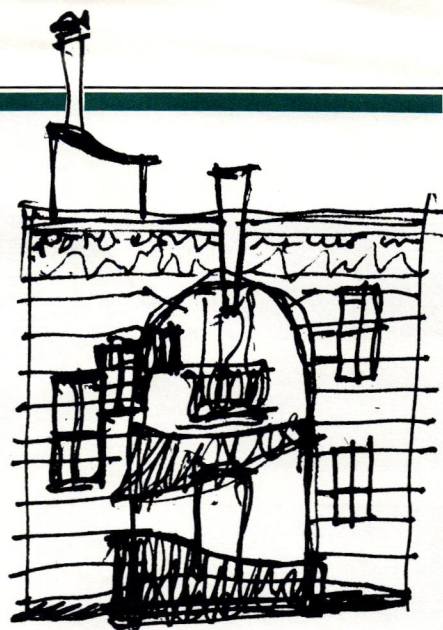
Kotas: Since the Florida house has a very large and generous site, there were few restrictions on the house.

Review: Did your clients for the San Francisco house see the early drawings?

Kotas: They saw anything they wanted to see. These sketches didn't mean anything to them. With plans we could talk about things and mark things in. They were conscious that not much could be done in the way of trimmings because of lack of money. They wanted to use the money inside and have a wonderful kitchen. It was important only that it not



*this is a great house,
a simple decorated
box of tremendous
livability.*



*that's it!
Simple as a
baby's ass
behind the
facade*

look like one of those little present-day boxes and that it not be Victorian. So we were somewhat theatrical. If you take the parapet off, though, all you have left is a box with the stripes on it and a coat of white paint would wipe that out.

Review: You don't use sections or isos or 3-D sketches and yet your house obviously has a good many 3-D spaces.

Kotas: I think that since those ideas arrive in the process of working in plan and elevation, that then there's no need to draw them. Most of the little sketches are trying out ideas that are in my head. I sometimes sketch things like this out and then drop them but I don't throw the sketches away. They are like notations. If I were writing, I might make notes on a card. The only real test comes when you do hard-line drawings.

Review: Was there anyone with whom you studied or have worked who has had an influence on your design method?

Kotas: The Department of City Planning has been an invaluable teacher to me about urban buildings. Not only from the outside, which is their main concern, but also from the inside because I got to see waves of drawings coming through from architects like Bill Turnbull as well as from the 'Baumans' and even from people who make their own drawings. You learn a lot about buildings just by looking at drawings.

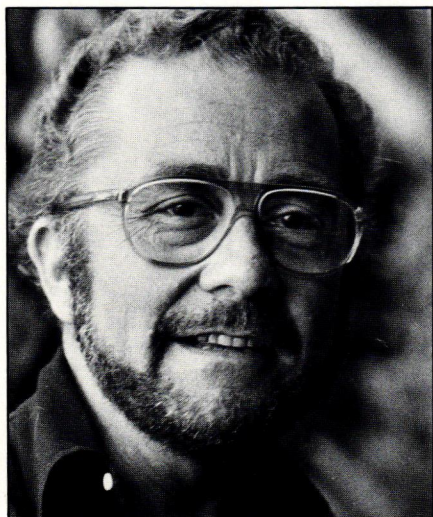
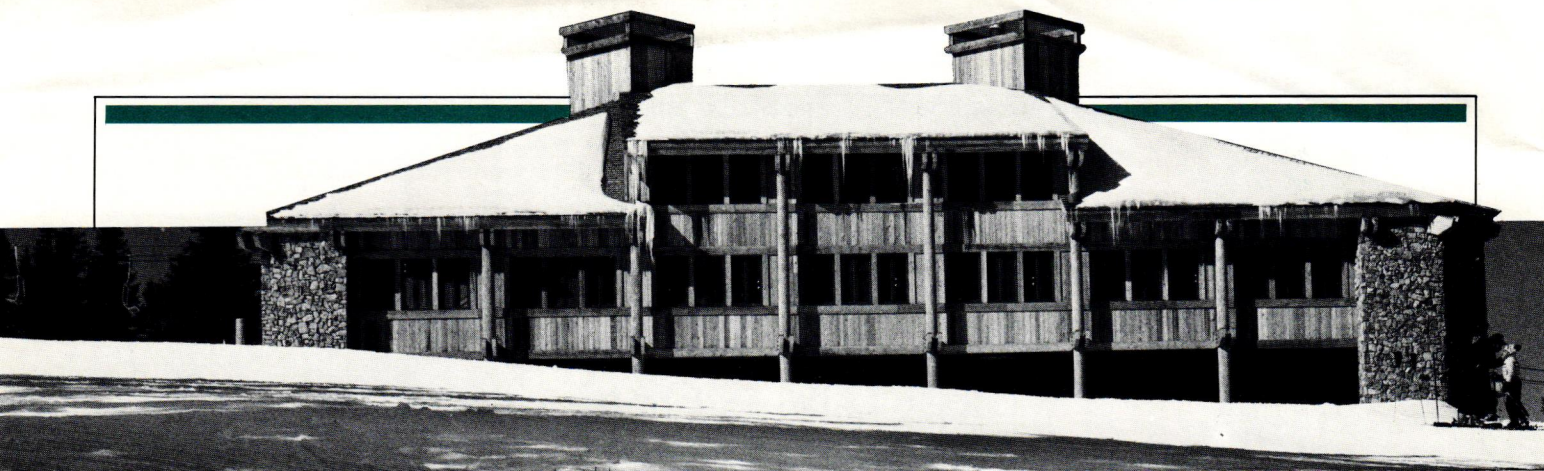


Photo: Wolfgang Herzog

10 INTERVIEW

Henrik Bull

About the Spruce Saddle Restaurant in Beaver Creek, Colorado

Review: *How did you start working on this project? What were the client's criteria and how did they affect your first thoughts about the project?*

Bull: I am a believer in indigenous or peasant architecture, things that have evolved over time in local materials, dealing with local climatic conditions. Our clients had very definite design criteria that were based upon alpine villages in the Pyrenees. We had a hard time meshing those two things. We looked at places like the Ahwahnee Hotel in Yosemite.

Review: *Describe how you went about drawing this project. When you got that first idea, did you pull out a roll of tracing paper and start scribbling?*

Bull: Yes. First, the team and I sketched bubble diagrams. Those diagrams *should* have related very directly to the final plan. It didn't really happen that way. I believe the first germ of the final scheme came in one morning on the back of an envelope. One of the guys was commuting to the East Bay and he was fiddling around. As soon as that version came in, it was really rather a quick process. We were, at that point, considering using round logs for

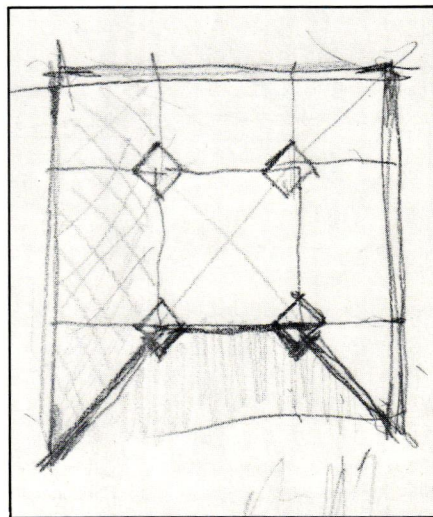
the whole structure which were being cut down from the site. We really started falling in love with that idea. In fact, I think we became somewhat unrealistic about it as far as budgeting and the capabilities of the local contractors were concerned. At one point, I said, "You know, it's fun to do this, but in the end we're going to end up with glu-lams." I was very unpopular for a few days but that's the way it ended up, glu-lam beams and log columns.

Sometimes, you work on a project for weeks. You wake up at 4:00 in the morning. You're just thinking and thinking about it. Finally you go downstairs and get out a pad and start sketching. Then you go back to sleep.

Review: *How do you feel about your drawings? Do you ever consider them to be a kind of art form? Or are they merely a record of your thoughts about a project?*

Bull: That depends. They're tools. My father was an illustrator and I think as a result, I don't draw very well. I was sort of intimidated. I evolved a kind of drawing which is not very illustrative, not a handsome thing as an art form. It's a tool for me, the client or a design team. I can diagram well enough to get across ideas in a meeting.

Around here, it's gotten to be sort of amusing that Henrik will say, "In prelimi-



Spruce Saddle Restaurant: Early design sketch

nary drawings, use a crude tool and in later stages of drawing, use very precise tools." You begin with a soft pencil and get more and more defined as you progress.

Review: *How did you use models in this project?*

Bull: I am distrustful of mass models which illustrate the building form rather than the internal structure. You're always looking down at the roof. It's very seldom that you look at a building that way in reality. We built a dozen models. The illustrations were more valuable, I think, because the client would never make the mistake of considering it from above.

We have a number of non-architect clients who have tremendous powers of visualization as well as some that cannot read plans at all. We have one who is blind and designing for him is very interesting. He became blind as an adult, so he can picture things in his mind. All you really have to do is guide his hand around the model so he can read the contours of the building. I've never asked him to sketch it up afterwards but I suspect he could do that, too.

Review: *Architects use various design tools to convert their initial ideas into designs. Can you tell us how you work and how your ideas become forms?*

Mack: Before I even start thinking about how a building should look, I select one of a set of typologies in my head like a crucifix or atrium plan. Each is connected with images. It's sort of a dictionary you have in your head. I start out with the plan. I grew up having a big emphasis on the plan rather than the facade, a functionalist approach. I still believe that the plan is the most important part of the building and that it can express social and cultural ideals. In a Beaux Arts plan, there was a correlation between height, volume and its appearance on the plan. I still feel that correlation can be expressed.

Review: *Where do you go from the plan? How does the building become three-dimensional or is that happening in your mind simultaneously as you develop the plan?*

Mack: Because of the typological approach, I don't really have to deal with how a room looks in elevation.

Review: *Why?*

Mack: Because I have already taken, let's say, memories of certain existing situations. I already know how those things will look.

Review: *But there are a million variations.*

Mack: Yeah, there are variations but my approach is not in pursuing subtleties of expression. I'm not after composition. I'm after creating useful, large enough, comfortable space in connection with the client's needs and the site.

Review: *What would the first presentation to a client look like?*

Mack: The first presentation would be a plan to fulfill the functional requirements, generally on flimsy with pencil or marker pen, an overlay on a hardline



10 INTERVIEW

Mark Mack

About his Underground House

drawing and an additional drawing like this sketch. You would see how the building sits on the site.

Review: *Do you use models?*

Mack: We use models sometimes but not to work on the design.

Review: *Is that because you can draw well or is there some other reason?*

Mack: I think maybe it's due to my architectural education. I could conceptualize very easily. I could walk into one corner of a drawing and see how it was three-dimensionally. We sometimes build models after the design is finished. Some clients have difficulty with models. It's really peculiar how you look into a model.

You never look at a house like that. An inside perspective is much more telling so we do a lot of little sketches. When clients express an idea during the meetings, I just draw that up and show how it looks, a little perspective sketch.

Review: *Do you think of your presentation drawings as art?*

Mack: Most presentation drawings are done after the fact, after the thing is completed. They are artfully done.

Presentation drawing for me, is like wrapping up the project. It's just like filing it. It's not done for the client. It's done for us, for exhibitions and publication.

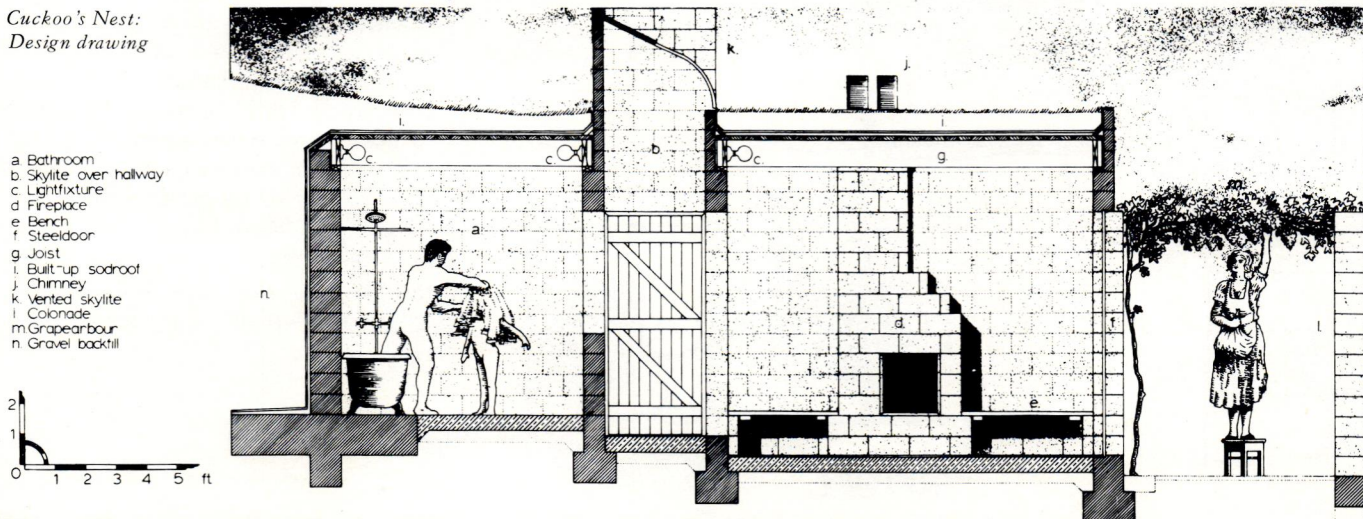
Review: *Is there anybody with whom you worked or studied who had a big impact on the way you work now?*

Mack: In the beginning, it was Hans Hollein for whom I worked in Vienna. He never threw anything out. I did not understand it at that point but he was saving napkins or toilet paper. Everything he touched, he saved. He had respect for his own art. In Europe, the divisions are much stricter. Nobody draws anything with pencil. Everything is ink and stencil. Drawings are much more mechanical, much more precise-looking there.

Review: *Do you think there is a real correlation between the way a person designs and what he ends up with? Do you think that people who design with models end up with noticeably different products than those who design with perspective sketches?*

Mack: I cannot really say that because most people do both. Some are better in one. Some are better in the other. For some, making a diagram is the same as for me making an interior perspective but he has to reinforce his with a model. I think maybe technique doesn't have that much to do with it.

*Cuckoo's Nest:
Design drawing*



Review: *What method did you use to first give shape to this building?*

Turnbull: I always work on an 8½" × 11" pad, doodling, scratching either diagrams or notations. I go through sheet after sheet, building up and working toward some conceptual idea about what the project at hand wants to be. A lot of diagrams and doodles get labeled "possible" which means that they're ideas that have been brought far enough along to know that they would solve the program and the budget, but they're not yet satisfactory intellectually in terms of trying to do a really good building. The process is one of try-try-try until you have something that is clear enough to be called a concept, one that can guide the myriad decisions coming down during the course of development of working drawings and specifications. For all of us, it's a gut-wringing search to try to find an answer. You know there are five or six prototypical things you can do but you're not really interested in doing that.

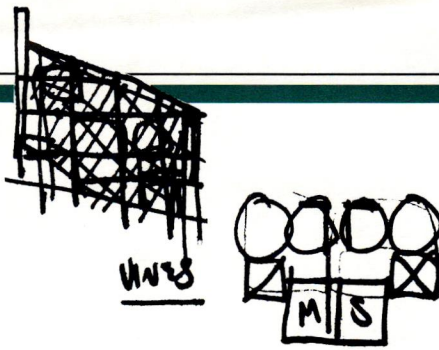
Then it goes up to 1/8" if it's a house, smaller scale if it's a bigger building, and then elevations and sections in order to take it to a study model. For us, it's the model that determines how the design might be led into something else. The key pieces in the process are the conceptual diagram and the study model.

Review: *At what point are drawings shown to the client? They presumably don't seek the sketches on the 8½" × 11" pad or do they?*

Turnbull: No, unless I'm designing in front of them.

Review: *Do you do that?*

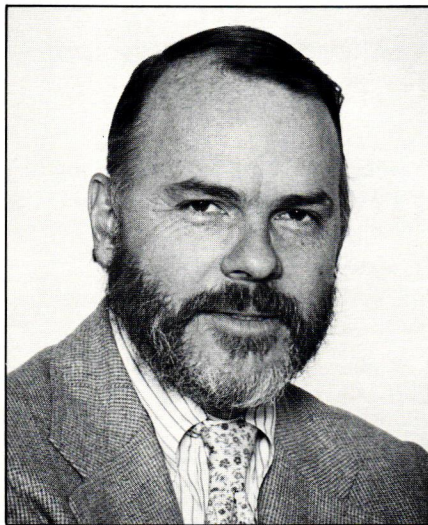
Turnbull: I've been known to. Typically, though the first presentation would be an 1/8" plan either drafted or freehand and



INTERVIEW

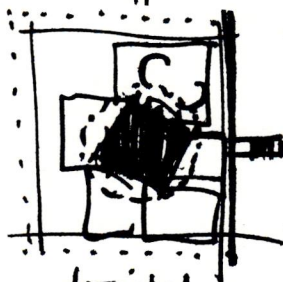
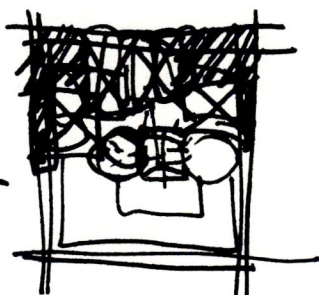
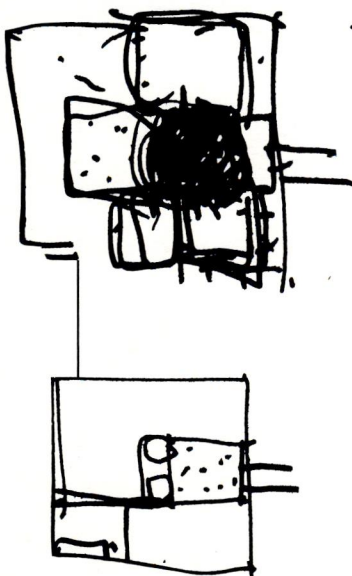
William Turnbull

About the Zimmerman
House



*Zimmerman House:
Conceptual sketches*

center tower



twisted

false front
lattice

- regular facade

a study model to go with it. When you get it into presentation form, you're waiting for the client to say, "Yuck, I hate this," or, "Terrific," or whatever.

Review: *How about details? Are those also worked out on the pad?*

Turnbull: What details? Details are normally worked out between whoever's actually doing the working drawings in the office and the contractor. Our details are pretty much builder's details. You draw enough so that you can talk to the builder.

Review: *How do you use color in your drawings?*

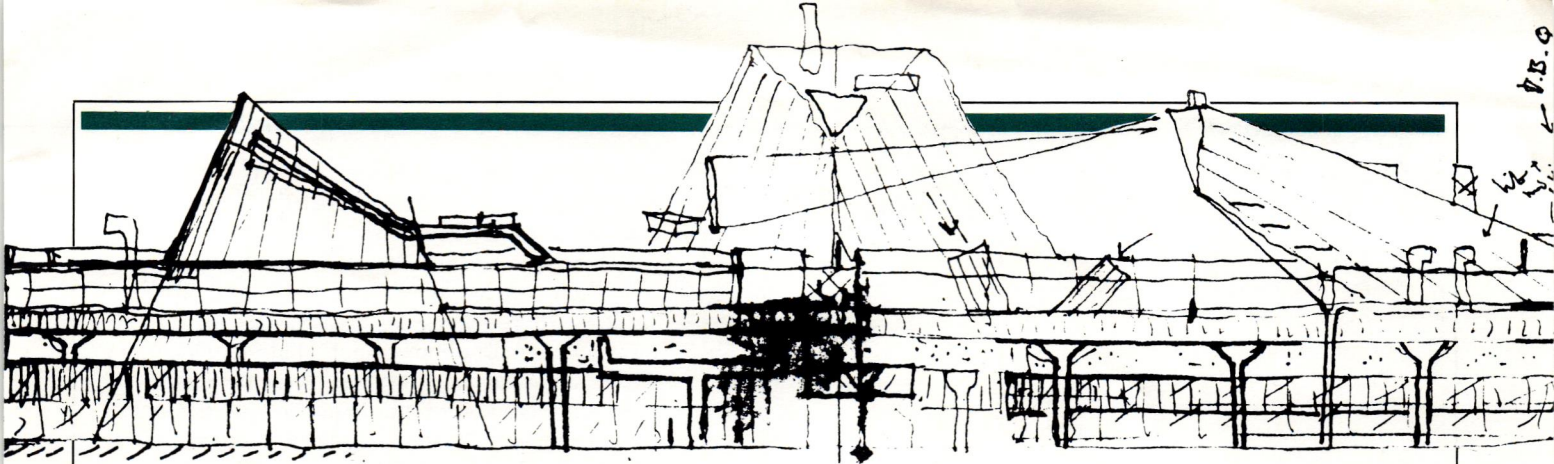
Turnbull: Sometimes we'll use color, one color on the first floor plan, another color on the second so when you're looking at tracing paper layered over tracing paper, the difference in color makes things legible. The existence of color in the actual building is important conceptually. What you want to do with it varies. If it's a way of reinforcing an idea, it may start really early. If it's a way of enriching a set of spaces, it may come in way late. It's another idea layer that lays on top of the space and the light.

Review: *When you were a student, how did you design? Was there somebody at school who had some input on the way you design?*

Turnbull: I think I've always designed this way. It's a matter of deciding when do you stop a design scheme versus a start which means it's okay, let's go. Lou Kahn said the same. He threw out a lot of good work in school. He even destroyed his own yellow studies. He set standards that are very hard to live up to. His works and his standards of excellence at two in the morning when we were tired and wanted to quit had a great impact. Once a week, we would go to Philadelphia and we would sit in Lou's office for crits. We would get out between three and four in the morning. He was damn good, a super teacher. He was not an easily understood man. Like most big folks, he was best with three or four people around his table with pencil in his hand or reaching for a book to describe what he meant. His words were elliptical but his diagrams coupled with his words were crystal clear. And rough: anybody who copied Lou's forms got eaten alive.

Review: *Has there been anyone since?*

Turnbull: I'm still trying to live up to Lou!



S.F. State Student Union: Design sketch

Review: *How did you record your first images for the Student Union Building?*

Clay: As far as I'm concerned, the pen is an extension of my hand. I use it everywhere. When there is a thought and it has to be recorded, it goes straight down; on a paper napkin, at luncheon, or in total isolation, in different parts of the world—wherever I am. Recording that thought and later developing it more fully are separate subjects in my mind. The little Leonardo da Vinci or Le Corbusier-like drawings are for quick record. They really are for me. It's basically a conversation between the tip of my pen and myself.

Review: *The Student Union is a very three-dimensional building. When you drawing, you are working on a flat sheet of paper. How do you bring those two concepts together?*

Clay: Although the piece of paper is flat, it doesn't mean you're looking at something that is flat in your mind. With something like the Student Union Building, you have to go, as early as possible to a model. The thing about a model, though, is that it takes time and commitment, whereas with the little sketches, I can draw a hundred and throw them away. There's no real commitment.

A model can't show you people. That's something I find almost all architects ignore in publications. The people are as much a part of the building in their color and movement. A building is not complete without people.

Review: *How did you use models during the design development stage?*

Clay: One model was made to explain to ourselves how we could build the building. It showed us how the cranes and trucks would go to work on the site. We could see how the members would be put into place. This is how we work out the details for ourselves—to see the process



Photo: Serge A. Scherbatósky

10 INTERVIEW

Paffard Keatinge Clay

About the San Francisco State University Student Union Building

of building. Then there is architectural space; trying to stick your head inside something. This is very important and a model helps. A building is not solid. The good things in life depend on space.

Every building is, in my mind, part of an evolutionary process. There is the idea that some people have that a building starts in the dark caverns of the mind. I think that is totally false. The real origins of any building are in previous buildings.

For example, a very large model for the Student Union was the San Francisco Art Institute. I could observe how people use it as with a living model.

Different buildings demand different design techniques. In a hospital I designed, we used computer graphics a lot. I didn't feel very much at ease with it quite frankly. It seemed very rigid. Without the beautiful spontaneity of a pen.

Review: *Once you established the basic program for the building, how did you work out the details, for example, the colors?*

Clay: I always try to establish principles in architecture. The details follow from those principles. For example, I know that if you paint concrete, you lose its expression of strength, almost entirely. If you leave it rough, there is a tremendous weight in it. Color is something that can always be applied after the building is built. That's the wonderful thing about it. You can see what reality is like . . . before coming in with color. It is like tuning the building when it is built.

Review: *How do you think about your drawings? Do you think of them as art?*

Clay: Yes, as I grow more experienced, they tend to become art.

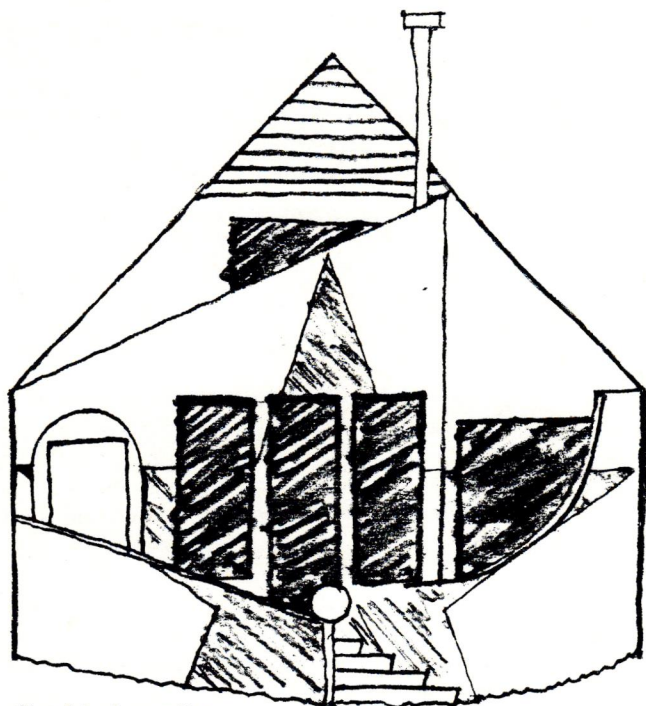
Review: *Do you perceive them as art while you are creating them?*

Clay: No, that would be too self-conscious. With self-consciousness, you lose art. Art is something that is developed and takes a long, long time. I really do think that one reaches a certain point when it is quite offensive to put anything down—even a note to oneself, or anything, if it is not also perfectly acceptable as a work of art, were you to blow it up and exhibit it. That's why I go back to the idea that the greatest ideas in the world begin in the bath tub or on the table cloth.

By JOHN BEACH

The Endurance Of Flimsy

and other obscurely related matters, including a review of House For Sale and diverse observations on certain design tendencies of the present day.



Sketch by Jeremy Kotas

Shortly after the illegal demolition of Irving Gill's Dodge House in Lost Angeles, the architectural historian and critic David Gebhart said in private conversation that buildings themselves were not important, so long as there was a good set of drawings. It was a comment of bitterly ironic intent, but it was draped across an uneasy armature of truth. The roster of influential and important buildings which we know only from drawings is a long one. Some have been destroyed: others were never built. In either case, the idea of the building; its imagery; its spaces; its structure; its ornament and whatever commitments, prejudices, aspirations and social patterns lie behind them, are conveyed to us completely, and at best compellingly, in the absence of the actual building, by drawings. This is true even of such structures as Frank Lloyd Wright's Midway Gardens. The Midway Gardens existed recently enough to have been extensively photographed and these photographs are quite successful in conveying certain visual qualities of the building surface. But architecture consists of contrasts of wide and narrow, high and low, light and dark, quiet and climactic. Photographs can deal only with the highlights, omitting the subtleties of sequence and juxtaposition. Photographs are like those albums entitled, *The Greatest HITS of Gustave Mahler* or whomever. A set of drawings is a score. It reveals the complete story for the trained eye. This documentary value has long been recognized, and it is primarily as a scholarly or an historical artifact that the architectural drawing has been collected and protected. This attitude has made the drawing the province of the historian, and has tended to separate practicing architects from any important part of their professional patrimony. In the 20th Century, too, the modernist stance viewed the traditional presentation plate drawing as atmospheric and truth-obscuring, and therefore evil. This is strange, since Wright, Corbusier, and Van der Rohe each clearly understood that drawing style was an important component of his rhetoric. Each carefully and self-consciously evolved a personal representational style which conveyed, in addition to the particulars of the building, philosophical and aesthetic intent. Over the last decade, the architectural drawing has been undergoing re-examination, and it is precisely this expressive aspect which most interests the current generation of designers.

In this context, the recent appearance of *Houses For Sale* is symbolically important, although the contents of the book, and of the show which generated it, are disappointing; disappointing because, although the catalogue makes reference to the avant garde, there is nothing startling or controversial to be seen. All the practitioners involved are well-established, and have been so long enough that they are all quite respectable. The entries seem blandly predictable. Ambasz is predictably slick, Pelli predictably linear, and Eisenman predictably incomprehensible. There is little experiment to reveal new facets of talents we have long admired. The projects fail to sum up in any final or comprehensive way the ideas, many of them important, with which we are already familiar; thus none of the included designs seems likely to assume any significant position in its author's oeuvre. It is, perhaps, the Ideal Villa concept which is at fault here. Architecture is a cross-disciplinary art, and derives much of its power from the resourcefulness with which the architect confronts the clash

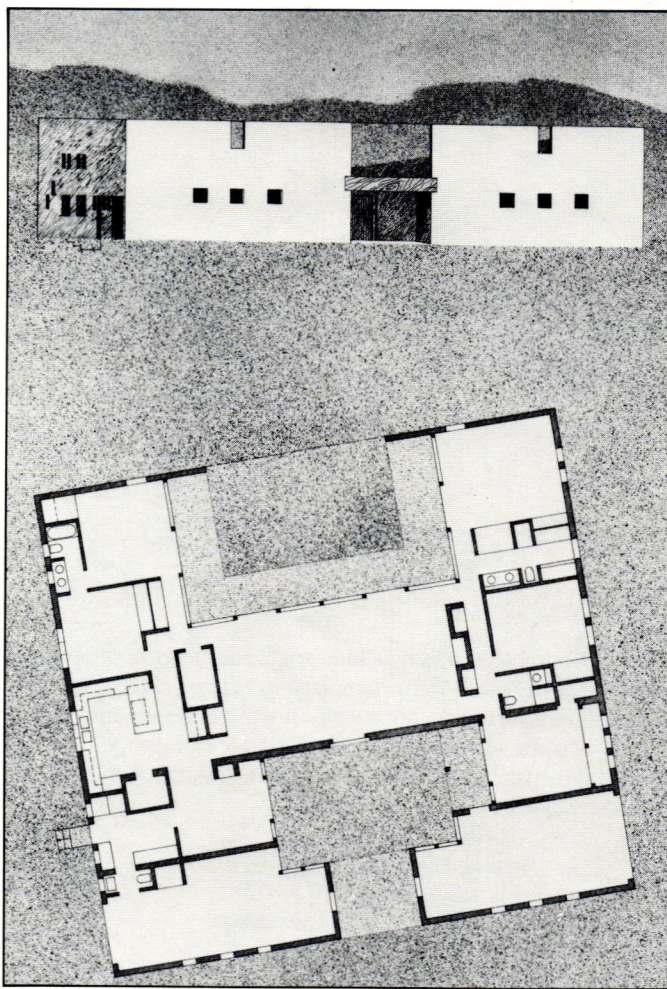
between irreconcilables of the aspirational and the nitty-gritty. The drawings from the recent show reviving the *Chicago Tribune* competition seem to suffer from the same lackluster disease; a disease which seems to attack the guts first. Setting aside the question of quality of the presented designs and viewing the drawings, as the exhibition intended them to be viewed, solely as art, they are again disappointing. This is due in part to the choice of participants. Charles Moore, for instance, has over the past 15 or so years developed with an endless series of combinations of partners, an uncanny skill at depicting buildings which dance with drawings which trudge. One wonders why Frank Gehry, whose work symbolizes the interchange between architecture and the ideas of contemporary art, was not included in the exhibition.

For those interested in architectural drawings either *Unbuilt America* or *Two Hundred Years of American Architectural Drawings* presents a wider range, more compelling imagery, and finer art. But *Houses For Sale* (exhibition and book) is crucial recognition that the architectural drawing is an idea whose time has come. Again. This was an exhibition held not in a museum of history but in an art gallery, a very major one; it was an exhibition not of a pre-existing and perhaps chance collection of miscellaneous drawings, but one committed to the recognition that the architectural drawing as an object deserves special and particular examination. But whatever symbolic importance *Houses For Sale* possesses as a milestone, of whatever quality, it was a recognition of an existing interest, rather than an origin. Apart from recent exhibitions at the Oakland Museum, the UC Museum and the San Francisco Museum of Modern Art; there are at least three places in the Bay Area (The Phillippe Bonifant Gallery, William Stout's Bookstore and Modernism) where one can view, on a reasonably regular basis, architectural drawings. At UC Berkeley, long the citadel of the chart and the diagram, the drawing has reappeared in student work as a primary method of expressing ideas about buildings.

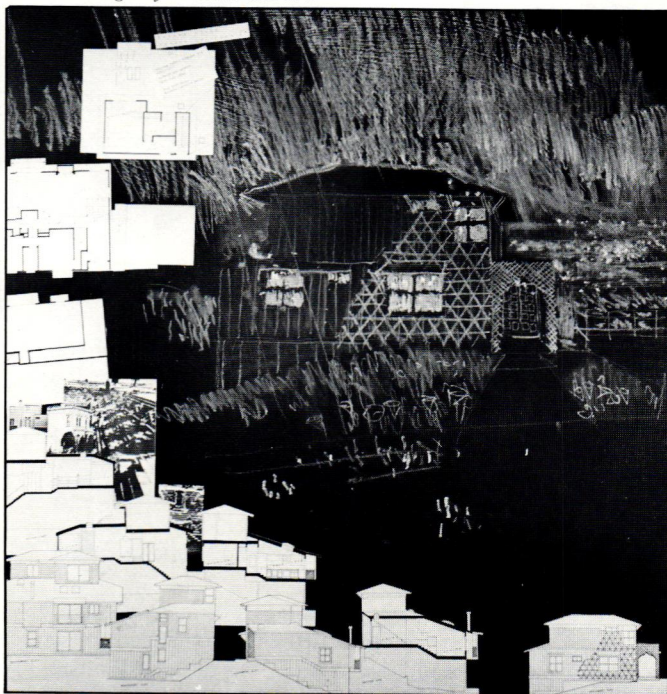
In local offices, particularly those of younger practitioners, modernists, post-modernists, post and beam modernists and post, post-modern modernists seem united only by a shared desire to refine and define their work through the drawing medium. A small sampling of this work shows a wide range of approaches.

Drawings from the office of Batey and Mack present the building floating like a precious object upon an ambiguous ground. Scale-giving elements are suppressed as are the literary components usually provided: there are no room names, there are no arrows whether stairs go up or down, there are no indications of direction or location. What is revealed immediately and clearly are the abstracted qualities of sequence and order. It is an architecture in which ideas about ordering, most frequently symmetrical ordering, are paramount. The drawings, as drawings, are quite beautiful, and provide a seductive argument for a brand of modernism currently embattled.

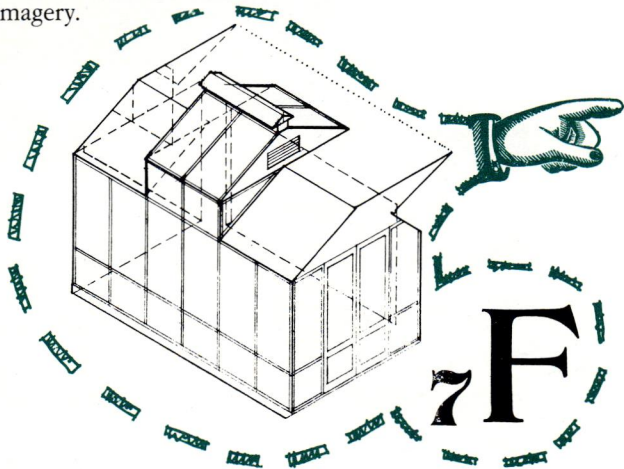
In the AIA show, *The House As Art* William Coburn exhibited two panels drawn in colored chalk on a black ground. Skillful drawings in throwaway materials, sophisticated designs rendered with kids' tools of chalk and blackboard, traditional perspectival presentation overlaid with a flutter of small



Above: Villa in the Napa Valley: Presentation drawing by Mark Mack
Below: Design by William Coburn

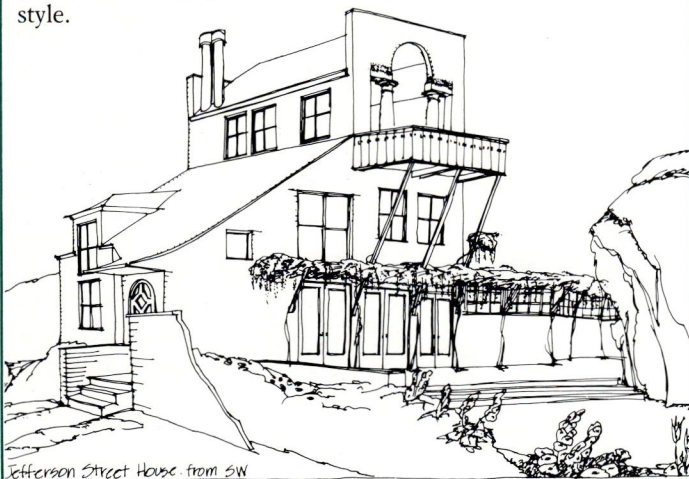


vignettes of plan, section and source. They presented a dichotomy, more easily and immediately expressed in the drawings than in words, of buildings whose spatial adventurousness was clothed in an unpretentious, almost folksy imagery.



Design by Floyd Campbell

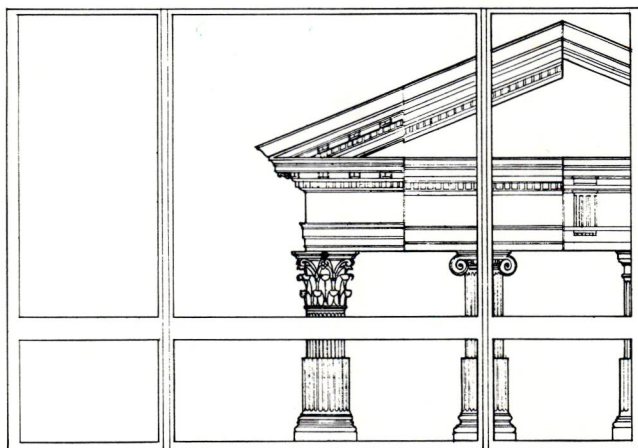
Floyd Campbell's drawings for a small addition to a suburban house similarly use a visual language to express intent. The use of stamps, arrows, comic strip thought balloons and other devices become flexible tools for a designer committed to vernacular imagery, industrial components and an anti-slick style.



Jefferson Street House by Thomas Gordon Smith

Thomas Gordon Smith's drawings have changed as his interests as a designer have changed. His earlier work, a series of small house designs in which fragments from an unlikely wide range of sources were combined in a very freewheeling way, was depicted in a loose, accommodating drawing style. As Smith's buildings have become more exclusively focussed on the grandeur (even on a small scale) of classical sources, so his method of explaining his buildings has changed. Pen and pencil, with their potential for casual elegance, have given way to more traditionally serious and formal painting techniques.

There is a current tendency on the part of many younger Bay Area designers to explore a further interchange between the drawing and the building; to derive the design idea itself from the conventions and techniques of drawing.

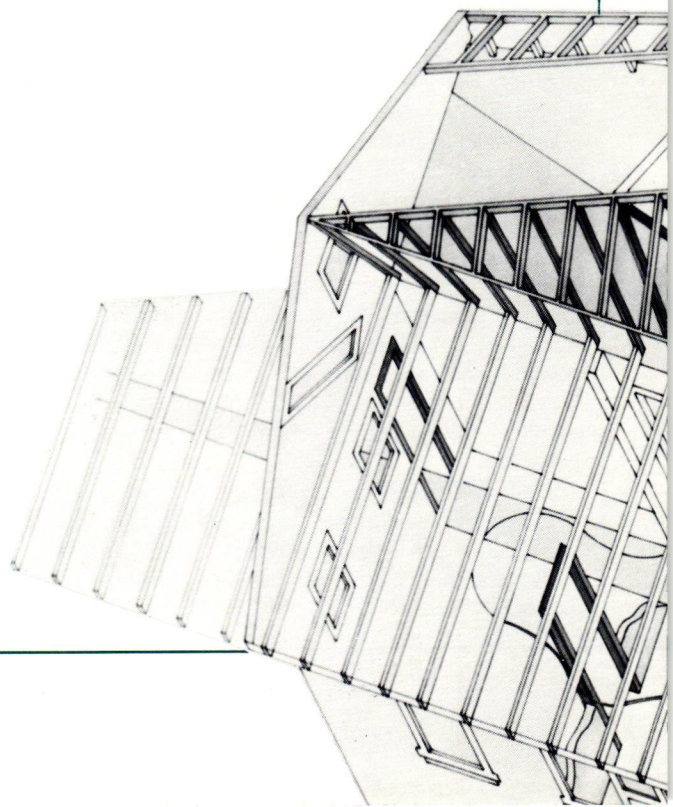


Design by J. Gordon Turnbull

Jeremy Kotas' project for a remodeling in Santa Monica used a series of angular shapes in blue glitter stucco, placed on different planes. When viewed from the entrance to the property, and only from there, these shapes assembled themselves into a five-pointed star. This is a three-dimensional exploration of a two-dimensional graphic device, the fragmentation that advertising art stole from cubism. A similar pattern was created for Kotas' own house in San Francisco, where the half-circles and dog-legs of the mission revival parapet were to meander across the facade in different colors and materials.

Jay Turnbull's design for the new facade of his architectural office is a visual quote from a 19th century textbook plate illustrating the orders. A remodeling in Palo Alto by Stanley Saitowitz is a straightforward translation from an unlikely source. The building appears to be an archetypical child's house drawing, and seems somehow incomplete without a scrawl of black crayon smoke emerging from the chimney. This deliberate naivety is combined with the perceptual

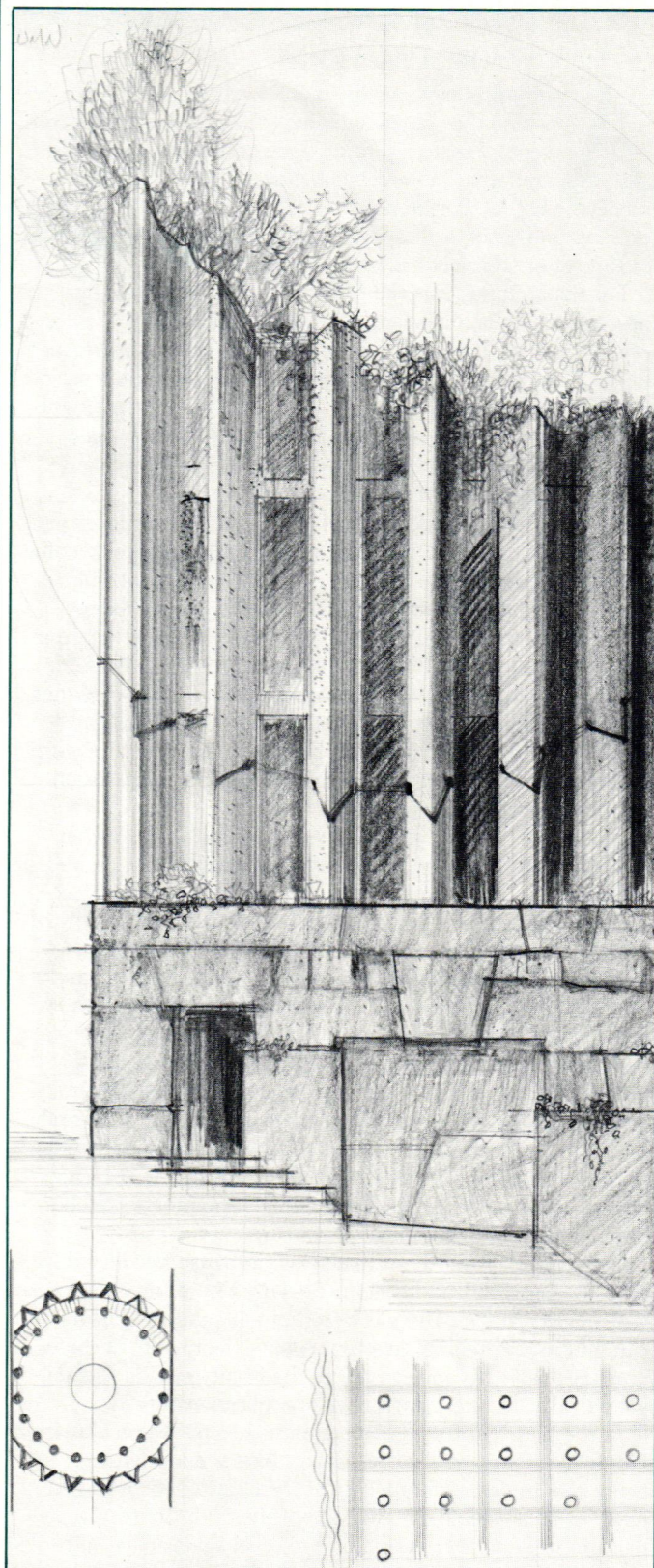
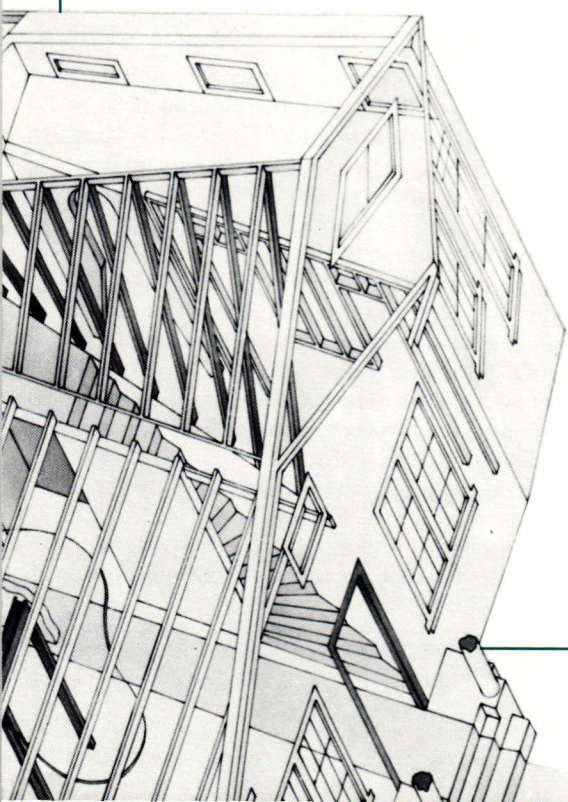
Remodeled house by Stanley Saitowitz



ambiguity which has provided a rich source for such artists as Michael Heizer and Richard Serra. Much current work is influenced by an older art: Piranesi's powerful drawings of the ruins of Rome which are, for many architects, their introduction to Classical antiquity. Ira Kurlander's series of townhouse designs for San Francisco derive openly from these drawings both for specific imagery and for their brooding atmosphere. One design, a colossal ruined column, was envisaged as occurring once per block in an area of the Sunset, implying that a giant temple once faced the western sea. Another, the curtain wall house, was both a pun and a powerful image whose great scale implied a much larger structure had once existed here. This implicative quality is to be seen in another building, this time without Classical imagery but using the same technique, Dan Solomon's Mé and Mé restaurant in Berkeley. Robert Mittelstadt's house for himself has a series of hanging columns above head level in the living room. It is as if one has walked into a book, into one of those fascinating and enigmatic drawings, the so-called worm's eye view, which attempt to explain the vaulted spaces of gothic and baroque churches.

Of the current involvement with the drawing and its intellectual and aesthetic implication, some efforts lead to architectural one-liners, others may provide ideas for a generation or two of vital work. The sorting-out can come later. The past is back. It may not stay; we may not want it to. But in re-examining the past, its monuments and its attitudes, we have rediscovered the architectural drawing, a cultural artifact of great power and complexity. It is both traditional and revolutionary, a record and a tool, a snapshot of the ideal and the porch step of reality.

John Beach is an architectural historian and designer who teaches at UCLA and U.C., Davis. He is a past chair-person of the Berkeley Landmarks Preservation Commission and has lectured throughout California. He is the author of the catalog, *Julia Morgan, An Architect From Oakland* and co-author of the book, *Bay Area Houses*.



The Column by Ira Kurlander

By SUSAN KING

Architects have never emphasized the process by which they create buildings. They discard their conceptual sketches, often done on napkins, envelopes and other discardable material, and usually the models, whether working models of cheap materials or costly presentation models, disappear within a relatively short period of time after a project has been completed.

For the architect it is the final product, not the creative process, which is important. This attitude is less apparent in other "fine art" fields. In one "manifestation" or performance of the Dada period in France, the audience was invited to watch the artist Francis Picabia make a drawing, while right behind him André Breton was busy erasing everything Picabia had drawn. In the end there was no final product, only a memory of what had happened.

Out of this history "Conceptual" and "Process" art developed, in which the process and the documents of that process become part of the final media. By the time Christo developed his *Running Fence: Sonoma and Marin Counties, California*, 1976, this concept had been fully accepted by the art community. The project was not just a fence, which stayed up only a short period of time, but the maps, drawings, town meetings, letters, television coverage, lawsuits and lawyers' briefs, the local roads, towns and people and a great deal of nature were included in the final "package." Never has the process been better documented for posterity.

But should the process be so well preserved and to what extent are architectural models and drawings to be considered as High Art? The answer varies from architect to architect. It is apparent in the interviews we conducted for this issue of the *Review* that there is a wide range of attitudes towards drawing. For Paffard Clay, "the pen is an extension of my hand. I use it everywhere . . . It's basically a conversation between the tip of my pen and myself." His drawings are private records of a thought process and appear unselfconsciously. Dan Solomon, on the other hand, speaks of difficulties in drawing: "A drawing is always for me a sort of grim struggle to represent and is therefore not a facile tool for manipulation as models are." In spite of his insistence that some representations are "beyond my drawing ability," Solomon's sketches have a charm and freshness.

The attitude towards architectural drawings as collectible items is changing and in the future larger museum collections will appear. Already there is a plethora of galleries putting on exhibitions and selling sketches. Again, the quality of these drawings vary. No one can refute the beauty of Eric Mendelsohn's ink sketches, which have often been exhibited.

In the 19th Century, great emphasis was placed on drawing. Hardly a student escaped the Beaux Arts schools without being able to draw every aspect of the classical orders down to the smallest detail. By the turn of the 20th Century, architectural students were beginning to rebel against that tight and rigid system. In fact, when Mendelsohn was asked about having to draw the daily, tedious assignments, he simply said that there was always a student poorer than he who could be hired to do them for him. He knew it was not the technique of drawing, but the act of creating, which was important.

To what extent does the "tool", the pencil, pen, model or computer terminal, affect the final design? This question arose in the late '60s and early '70s when many California structures, exemplified by MLTW/Moore Turnbull's Kresge College, began to look like extra-large foamcore models which had been cut out with a giant mat-knife. Did the foamcore dictate the style of the building or did the type of building the architects wanted dictate the use of foamcore for their models? In the end, in spite of what must be a direct relationship, it is not foamcore or computers which have affected the face of architecture as much as new building materials, new construction methods and new client needs. Drawings and models are only some of the factors involved in the complicated business of making architecture.

In our series of interviews, it readily becomes apparent that

The Process of Arch

Michelangelo's Model of St. Peter's

BY THE END of November, 1546, Michelangelo had reluctantly accepted the appointment at St. Peter's in Rome. He was number five in a long succession of head architects, but probably the only one who had true respect for Donato Bramante's original centralized plan. He immediately set to work developing that plan, unifying and strengthening it, first in drawings and then in model form. Within three months a clay model had been completed and a wooden model started. In a painting by D. Passignani, *Michelangelo Presenting His Model to the Pope*, in the Casa Buonarroti collection, we see Michelangelo in front of the model pointing out details to the Pope and assorted clergymen. It is a large model, from base to lantern as tall as the figures who surround it. Unfortunately most of the model is obscured by one man, standing to the left, swathed in ornate cloak. His body blocks our view of all but the edge of the great dome and one arm of the church. Passignani's painting was executed in 1620, 73 years after the model was presented. Was it still in existence at that time? Are the details visible in the painting accurate representations of Michelangelo's design? Or was the knowledge of the model already second-hand by 1620? Neither the original clay model nor the first wooden model of 1547 survive. If they had, we would know a great deal more about the 16th Century design process and would be able to see Michelangelo's total conception for St. Peter's without the subsequent changes and additions by Giacomo della Porta and Carlo Maderno.

models serve a large variety of functions. Cheap cardboard and styrofoam "mass" models are made to be torn apart, changed, reassembled, re-made. They provide a way of working through ideas, of making concrete the spaces and volumes the architect sees in his mind's eye. More formal presentation models, often built late in the design stage, or even after a building has been completed, serve the client who, unlike architects such as Mark Mack, do not always have the ability to "walk into one corner of a drawing and see how it (is) three-dimensionally."

Some of these models are used by the client to sell rental space. Others are used for fund-raising or to pacify governmental agencies. "There are more problems in convincing governmental agencies that the project you're going to do is good and deserving. The elaborate drawings and models that

we did were done for the governmental process, not for our client," points out Rodney Friedman, speaking of The Islands housing project. Henrik Bull mentions the benefits of models and braille plans for blind clients who have to visualize through their fingers. And Paffard Clay, discussing the San Francisco State University Student Union Building, reveals that one model was made by his office "to explain to ourselves how we could build (the building) . . . That model showed us how the cranes and trucks would get in to work on the site." Thus, problems and difficulties which might otherwise have occurred during construction were alleviated in advance.

Several architects mention having a dictionary or source book in their heads. Out of this realm of memories and visual imagery comes the new design, even when there is a conscious attempt to avoid preconception. Rarely is there a building or an idea without prototypes. It is the job of the historian to trace back and pinpoint those sources pulled from the "catalogue" of the creative mind. Either subconsciously or consciously the tendency is to work in "sets" or series, one idea developing out of the next.

This tendency is easier to document in paintings. Albers' *Homage to the Square* and Monet's *Rouen Cathedral* played out the variations of a theme, much as Bach did in his fugues. David Smith, the American sculptor, lamented that each new sculpture spawns ten more and there is never enough time to build them all. In architecture, scale and money limit this generative process and variations on a theme sometimes exist only in model or drawing form.

This serial development is particularly evident in the interview with Bill Valentine of HOK regarding the design of the new Levi Strauss headquarters building, where "50 or 60" rough styrofoam models were made. "We were able to test a hundred possibilities in model form because of the (styro)foam . . . I think if we just tried to draw it and record it in models at the end, we'd have had a different building," he reflects. While several of the designs generated by this process probably would have made successful buildings, in the end only one could be chosen, but not before all the variations, permutations and possibilities had been seen.

Only Rodney Friedman and Paffard Clay mention using color as a basic "tool", and not just as a coding mechanism. Friedman emphasizes painting the environment to create a special effect; Clay uses it to lighten the appearance of concrete walls between load-bearing members in the tradition of Le Corbusier.

If any conclusion can be drawn from these interviews, it is that no two architects work alike, although there are often parallels and reflections. But while we can never truly pinpoint what the exact process of creation is, insights gained through analysis of the drawings, models and other descriptive materials such as these interviews show that the "process" of making architecture has its own fascination and certainly deserves more study and attention.

Susan King is an architectural Historian who has been associated with the San Francisco Museum of Modern Art for nine years. She teaches the history of art and architecture at City College. She was the author of a show entitled "The drawings of Eric Mendelsohn" and co-author of "A view of California Architecture, 1960-1976"

Making ecture



Michelangelo presenting his model to the Pope, 1620 (detail) by D. Passignani. Taken from *The Architecture of Michelangelo* by James S. Ackerman

COMMENTS

Water on the Brain

WHAT WILL HAPPEN when we run out of water? How will we water our lawns then? How will our kids have squirt gun fights? More to the point, where will we find watermelon, watercress and all the other veggies that make life not only bearable, but possible?

The questions are occasioned by a grim procession of events and controversies concerning H_2O : Many of the Eastern states are suffering under a protracted drought... The dangerously low water level in the Mississippi has curtailed transportation, forcing extensive dredging by the Corps of Engineers... Back home in California, the debate over the Peripheral Canal rages, and the outcome may very well be that Northern Californians (and especially our agricultural breadbasket, the Central Valley) will be shorted so that Southern Californians can continue to water their lawns and fill their swimming pools in the style to which they have become accustomed...

Recently we came across a pair of articles offering vastly different approaches to solving the great water dilemma.

The 23 February 1981 issue of *Fortune* magazine included an article entitled "Ending the Southwest Water Binge." According to *Fortune*, there is no real shortage of water in the West yet, and there will not be in the future if the price of water is allowed to rise to its replacement costs. Now Western water projects are the beneficiaries of huge subsidies in the form of expensive infrastructures and restrictions on price increases. This subsidy to the Central Valley farmer has been estimated by a government agency at \$1,100 per acre. Because water is so inexpensive, its use (particularly by the agricultural business which uses over 80% of this state's water) is based on its cheap price and not on its actual scarcity.

Fortune points out that many farmers use inferior land and large amounts of water to grow relatively low value crops



such as alfalfa. With an unrealistically low price for water, there is no incentive for a farmer to install efficient but expensive sprinkler systems to replace open ditch irrigation. One federal government report concluded that more than 50% of the water used for agricultural irrigation in the United States is wasted. Urban municipalities in the West are also water spendthrifts. As *Fortune* noted, "The Los Angeles region today bothers to clean up only 60,000 acre-feet a year of its 550,000 acre-feet of potentially reusable water, while insisting that the state build a \$1 billion canal to bring south another 60,000 acre-feet from the northern part of the state." Likewise, the Coachella Canal from the Colorado River to Southern California loses 300,000 acre-feet of water each year through evaporation and seepage into the ground because the canal is unlined and uncovered.

Fortune's solution to this problem is to allow all users of water whose supplies exceed their needs to sell their surplus. By creating a water market, the price of water would increase substantially to

reflect its actual value and its status as a scarce natural resource in the West. Conservation methods would be encouraged, because any surplus would become a marketable commodity.

Some of the disadvantages to this approach are obvious. Initially, farmers would be forced to shift crops and marginal agricultural and mining operations would shut down. Further, hundreds of thousands of man hours would be spent in court straightening out ancient water rights claims and establishing a system for regulation of ground water use. The alternative, however, is to continue to let the low price of a valuable resource encourage its wasteful use—a squandering typified by the fact that the Central Valley farmer pays only \$3.50 an acre-foot for his water—a rate that does not cover operating expenses, for California's Central Valley project loses \$79,000 a day!







The 8 March 1981 "This World" section of the Sunday *Examiner* carried an article on macroengineering. Today's macroengineer is the modern equivalent of John Augustus Roebling, Joseph Paxton, Gustav Eiffel and the other 19th Century builders who designed and executed projects at a scale far above the standards of their times. Contemporary descendants of such projects include energy and irrigation projects that cost tens of billions of dollars and alter thousands of square miles of land.

One macroengineering project mentioned in this article was a colossal North American water plan. The scheme would begin with the construction of a dyke across the narrows of James Bay, the inlet in the southeastern corner of Hudson's Bay. Once the dyke was constructed, the rivers filling James Bay would eventually turn it into a fresh water lake. Water from this reservoir could then be pumped to the Great Lakes and distributed from the Great Lakes to the head waters of the Mississippi, the Missouri, the Colorado, the Rio Grande and other rivers, thereby

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supplying water to the semi-arid West. This scheme is based on the politically realistic premise that it is easier to move the water to where the people want to live than to restrict people's freedom of choice in location. After all, the water scarcity in the Southwest is a resource allocation problem (albeit on a continental scale).

With somewhere around 5% of the world's population, North America is blessed with well over 50% of the world's supply of fresh water. The Peripheral Canal is estimated to cost in the billions, and it will probably only meet California's voracious water appetite for a decade, possibly two. It is at best a short term solution. It might be more appropriate for California to join with the other Western states to fund a regional solution for the problem.

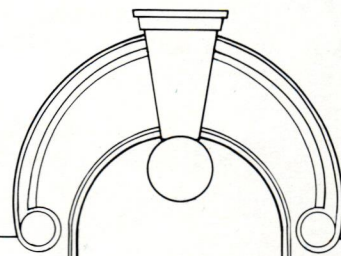
Preposterous, you say? Consider this: public hearings were held throughout Quebec in February reviewing Hydro-Quebec's plans to spend an additional \$55 billion over the next 10 years on expansion of the La Grande River hydroelectric project into an immense energy project occupying much of the James Bay region of Quebec. The per capita equivalent of this expenditure in the United States would be \$2 trillion. Parts of the James Bay project have been under construction for eight years and the La Grande River hydro dam is 80% complete. All of this is being undertaken by Hydro-Quebec, which has been able to maintain its position as North America's most profitable utility in spite of this outlay. When completed the James Bay project will meet Quebec's electrical needs at the lowest prices in the world and will give the province a huge surplus to export to neighboring Ontario and the United States.

The Canadians seem to be well ahead of us in acting upon the realization that *not only* is there no such thing as a free lunch—there's no such thing as a free glass of water, either.

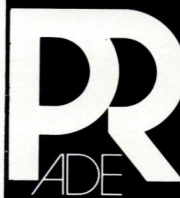
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